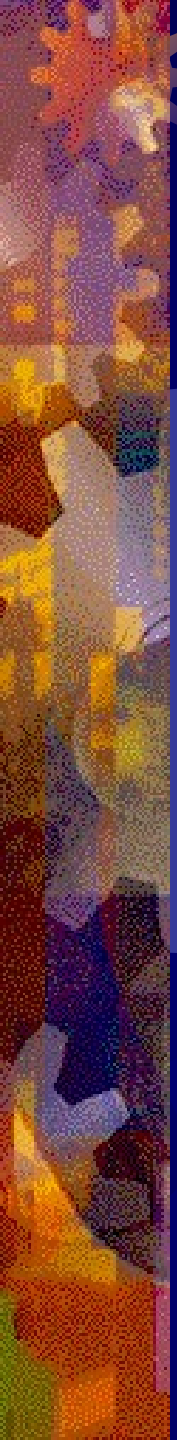


MORGANZA TO THE GULF

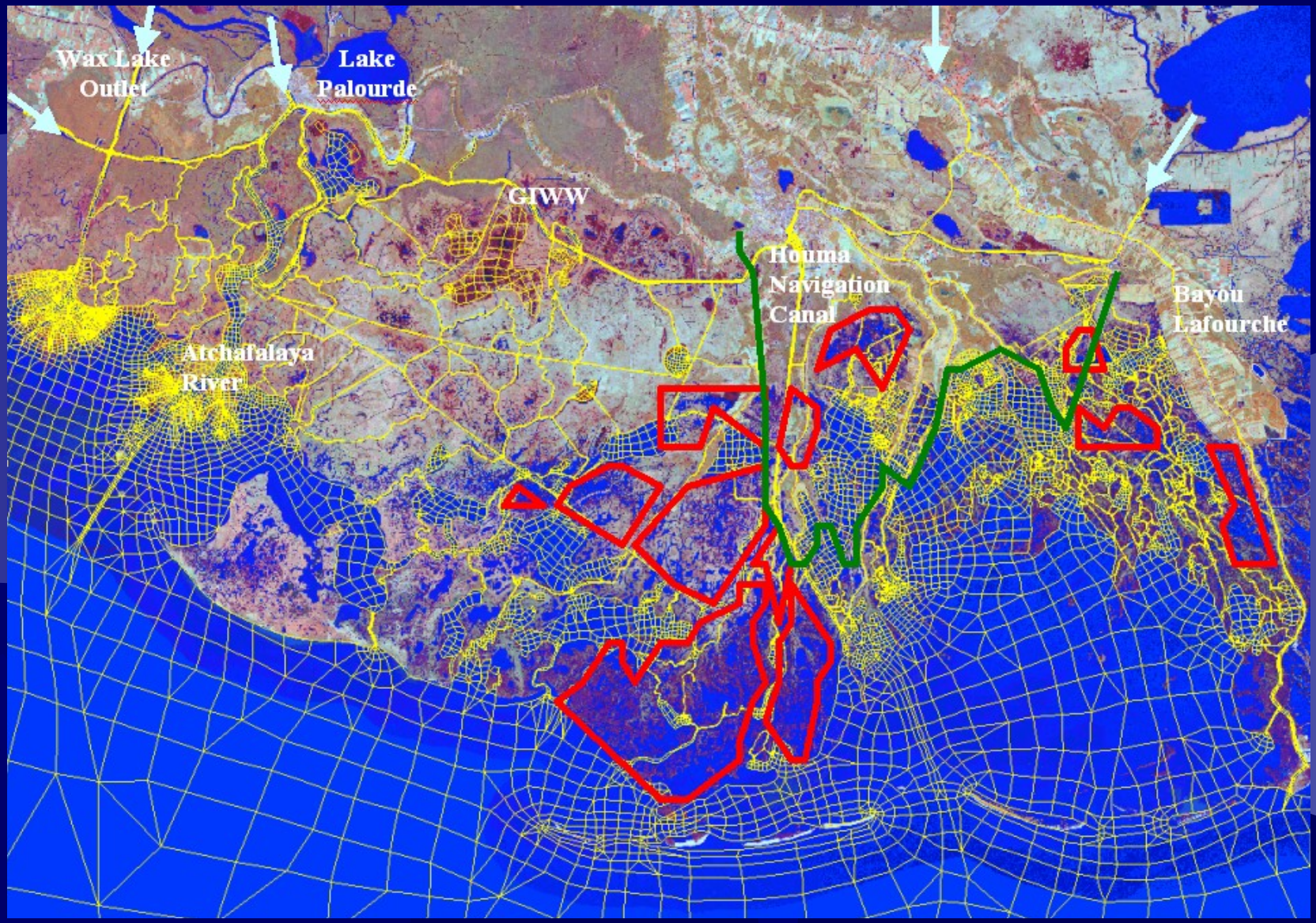
SYSTEMWIDE MODEL UPDATE

A. M. Henville
May 3, 2005

Model Geometry

- Two-dimensional elements in X,Y plane
- Element material properties
  - Peclet control or Eddy Viscosity Control
  - Roughness by depth or wetting and drying by Marsh porosity
- Bathymetry in Z plane
  - Results are depth averaged

Mesh


Wax Lake
Outlet
Lake
Palourde
GIWW
Houma
Navigation
Canal
Bayou
Lafourche
Atchafalaya
River

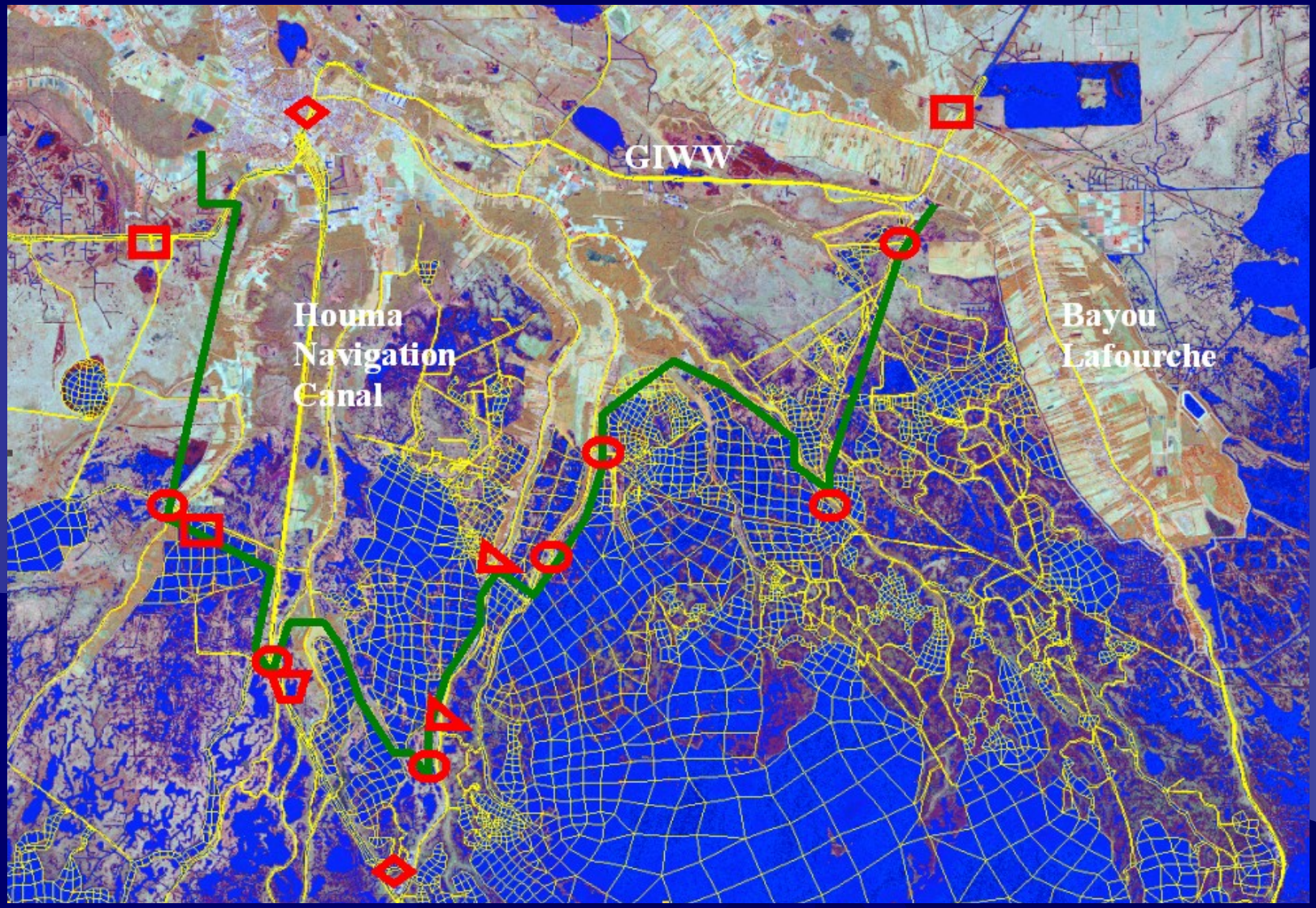
Boundary Conditions

- Tidal stage fluctuations from the Gulf of Mexico
- Various freshwater inflows from major waterways including Atchafalaya River, Wax Lake Outlet, GIWW West of Atchafalaya, Bayou Lafourche, and GIWW East of Larose
- Data collected by USACE and other agencies

USACE Data Collection Points

LOCATION	TYPE OF DATA COLLECTED
GIWW West of Minor's Canal	Stage, Velocity, Conductivity, Temperature
Falgout Canal West of Bayou Dularge	Stage, Conductivity, Temperature
Bayou Dularge South of Falgout Canal	Stage, Velocity, Conductivity, Temperature
Bayou Grand Caillou East of HNC	Stage, Conductivity, Temperature
Bayou Petite Caillou North of Cocodrie	Stage, Conductivity, Temperature
Lapeyrouse Canal near Bayou Petite Caillou	Stage
Bush Canal near Bayou Petite Caillou	Stage
Bayou Terrebonne near proposed levee crossing	Stage, Conductivity, Temperature
Humble Canal East of Bayou Terrebonne	Stage, Conductivity, Temperature
Bayou Point Aux Chenes West of Grand Bayou Canal	Stage, Conductivity, Temperature
Grand Bayou Canal South of Bayou L'Eau Bleu	Stage, Conductivity, Temperature
GIWW East of Larose	Stage, Velocity, Conductivity, Temperature
Houma Navigation Canal South of Bayou Grand Caillou	Stage, Velocity

USACE Data Collection Points



Verification of Base Conditions

- A period about one month in length will be been chosen as verification event
- Verification event will be the average of conditions collected during the year
- When the event is simulated, the model is verified.

Geometry Modifications

- The proposed levee alignment will be added to the mesh
- Production runs can then be made to estimate and predict changes in the system
- The average condition for each season will be run for a duration of 1 month

Establish Discharge Capacity of Environmental Structures

- Artificial openings are created where the environmental structures are proposed
- Flows before and after, inside and outside the levee will be compared.
- Openings can be resized and/or relocated so that the flow distribution remains the same.

Assess Impact of Project Parameters

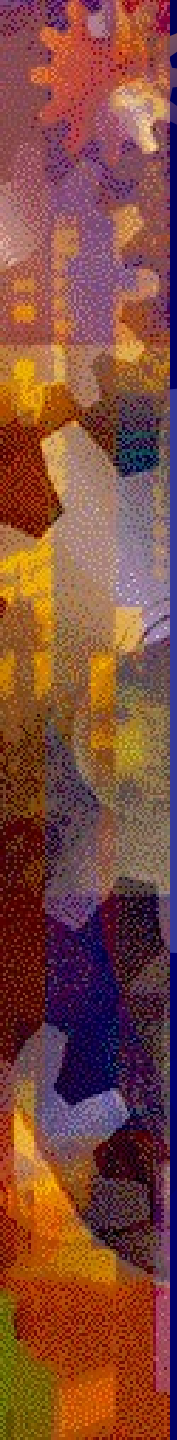
Salinity (ppt) Stage (ft)

Flow (cfs) Velocity (ft/s)

- Any parameter can be compared at any point between different scenarios.

How the HET Can Help

- Provide any available information about elevations in the marsh areas that are part of the model
- Type of predominant vegetation in particular marsh areas
- Provide data (flow, stage, salinity) for existing and possible additional boundary conditions.



Questions?